

CLAIMS:

1. An apparatus for generating a signal for wireless transmission comprising signal generating means for receiving data and generating a signal containing received data for wireless transmission, and control means for controlling the data carrying capacity of said signal.
2. An apparatus as claimed in claim 1, wherein said control means is adapted to control at least one parameter defining the data carrying signal to vary said capacity.
3. An apparatus as claimed in claim 2, wherein said parameter is at least one of amplitude and phase.
4. An apparatus as claimed in claim 2, wherein said control means includes encoding means for inserting code into said data, and code control means for controlling the quantity of code inserted into said data.
5. An apparatus as claimed in claim 1, wherein said control means is adapted to control said capacity in response to the quantity of data supplied to said signal generating means.
6. An apparatus as claimed in claim 1, wherein said control means is arranged to control said capacity based on a condition of the wireless signal received by a wireless receiver.
7. An apparatus as claimed in claim 6, wherein said control means is arranged to control said capacity in response to a measurement of error in the received signal.
8. An apparatus as claimed in claim 1, wherein said control means is arranged to control said capacity based on a

parameter defining a wireless signal generated by another wireless signal generator.

9. An apparatus as claimed in claim 1, comprising further control means for controlling the power of said wireless signal.

10. An apparatus as claimed in claim 9, wherein said further control means is adapted to control said power in response to at least one of (a) the quantity of data received by said signal generating means, (b) a condition of the transmitted wireless signal as received by a wireless receiver, and (c) a condition of another wireless signal generator.

11. An apparatus as claimed in claim 1, further comprising means for generating and transmitting a signal indicative of the capacity and/or power of said signal.

12. An apparatus for generating a signal for wireless transmission comprising signal generating means for receiving data and generating a signal containing received data for wireless transmission, monitoring means for monitoring the quantity of data supplied to said signal generating means for wireless transmission, and control means for controlling the power of the generated wireless signal in response to said monitored quantity of data for wireless transmission.

13. An apparatus as claimed in claim 12, further comprising request generating means for generating a request to increase the power of said wireless signal, receiving means for receiving a signal indicating whether permission to increase the power is granted or denied, and wherein said control means is adapted to control said power in response to the received signal.

14. An apparatus as claimed in claim 12, further comprising notification generating means for generating a signal based on the power of said wireless signal and means for transmitting the notification signal.

5 15. An apparatus as claimed in claim 12, further comprising comparing means for comparing a parameter indicative of the monitored quantity of data for wireless transmission with a predetermined threshold value, and wherein said controller is arranged to control said signal generating means  
10 to decrease said power in response to said parameter decreasing from a value at or above said predetermined threshold to a value below said predetermined threshold.

16. An apparatus as claimed in claim 12, further comprising memory means storing a parameter indicative of the  
15 maximum output power level for the wireless transmission signal that does not interfere with another wireless signal.

17. A transmitter for generating and transmitting a wireless communication signal, the transmitter including signal control means for varying the power of the communication signal and limited means for limiting the control means to control the  
20 power to reduce or substantially prevent interference by said wireless communication signal of a second wireless communication signal from another transmitter.

18. A transmitter as claimed in claim 17, wherein said  
25 limiting means stores information indicative of the maximum power level for said transmitter to substantially prevent interference with said second communication signal.

19. A transmitter as claimed in claim 18, wherein said value is determined based on the location of said transmitters.

20. A transmitter as claimed in claim 18, wherein said value is calculated based on the topology of the area in which said transmitters are located.

21. A transmitter as claimed in claim 18, wherein said value is based on a measurement of real interference by said wireless communication signal of said second wireless communication signal.

22. A transmitter as claimed in claim 17, wherein said limiting means is responsive to a signal indicative of interference by said wireless communication signal of said second wireless communication wireless signal to cause said control means to reduce said power.

23. A transmitter as claimed in claim 22, further comprising a wireless receiver for receiving said signal indicative of said interference.

24. A transmitter as claimed in claim 17, further comprising signal generating means for generating a signal indicative of a power level for said wireless communication signal and for transmitting said signal.

25. A transmitter as claimed in claim 24, wherein said signal indicative of a power level comprises a request for changing the power level of said wireless communication signal.

26. A transmitter as claimed in claim 24, wherein said signal indicative of a power level comprises a request for increasing said power level.

27. A transmitter as claimed in claim 24, wherein said signal indicative of a power level comprises a notification of a power level for said wireless communication signal.

28. A transmitter as claimed in claim 27, wherein said notification comprises one of an increase and a decrease in said power level.

29. A transmitter as claimed in claim 17, further  
5 comprising means for receiving data for wireless transmission, monitoring means for monitoring a parameter indicative of the quantity of received data, and signal generating means for generating a signal in response to said parameter indicative of a power level for said wireless communication signal.

10 30. A transmitter as claimed in claim 29, wherein said signal indicative of a power level comprises a request to change said power level.

31. A transmitter as claimed in claim 30, wherein said request comprises a request to increase said power level.

15 32. A transmitter as claimed in claim 29, wherein said signal indicative of a power level comprises a notification indicative of a power level for said wireless communication signal.

20 33. A transmitter as claimed in claim 32, wherein said notification comprises one of an increase and a decrease of said power level.

34. A transmitter as claimed in claim 29, wherein said receiving means comprises a buffer and said parameter is based on the level of data contained in said buffer.

25 35. A transmitter as claimed in claim 29, further comprising channel capacity control means for varying the capacity of said wireless communication signal in response to said parameter.

36. A transmitter as claimed in claim 35, wherein said capacity control means comprises a modulator capable of modulating data at at least two different levels of the number of bits per baud.

5 37. A transmitter as claimed in claim 35, wherein said capacity varying means comprises coding means for inserting code into said data and for varying the quantity of code inserted into said data.

10 38. A transmitter as claimed in claim 17, further comprising signal receiving means for receiving a signal indicative of a quality of said wireless communication signal and capacity control means for controlling the data-carrying capacity of said wireless communication signal in response to the quality indicating signal.

15 39. A transmitter as claimed in claim 38, wherein said quality is based on a measurement of at least one of the power level of the wireless communication signal as received by a wireless receiver, and the level of error contained in the transmitted wireless communication signal as received by a  
20 wireless receiver.

40. A transmitter as claimed in claim 39, wherein said quality indicating signal comprises a signal transmitted from another transmitter.

25 41. A transmitter as claimed in claim 38, wherein said signal receiving means comprises a wireless receiver for receiving a wireless communication signal, and said transmitter further comprises means for monitoring a quality of a wireless communication signal received by said receiver and wherein said  
30 capacity control means is responsive to said monitored quality for controlling the data carrying capacity of said wireless communication signal.

42. A transmitter as claimed in claim 41, wherein said quality monitor comprises means for detecting an error rate in said received wireless communication signal.

5 43. A transmitter as claimed in claim 38, wherein said capacity control means is arranged to reduce the capacity of said wireless communication signal in response to an indication that said quality is below a predetermined threshold.

10 44. A transmitter as claimed in claim 38, wherein said power controller is responsive to said quality indicating signal to increase said power level.

15 45. A transmitter for generating a communication signal for wireless transmission, comprising monitoring means for monitoring a quality of said wireless communication signal and capacity control means for controlling the data carrying capacity of said wireless communication signal in response to said monitored quality.

20 46. A transmitter as claimed in claim 45, wherein said capacity control means is arranged to reduce the capacity of said wireless communication signal if said quality falls below a predetermined threshold.

47. A transmitter as claimed in claim 45, further comprising power control means for controlling the power of said wireless communication signal in response to said quality.

25 48. A transmitter as claimed in claim 47, wherein said power control means is responsive to said quality to increase said power level if said quality falls below a predetermined threshold.

49. A transmitter as claimed in claim 45, wherein said capacity control means comprises a modulator capable of varying

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the number of bits per baud between at least two different levels.

50. A transmitter as claimed in claim 45, wherein said capacity control means comprises a coder for inserting code  
5 into said data and being capable of varying the quantity of code inserted into said data.

51. A controller for controlling the operation of a of wireless transmitter in a wireless communication network containing a plurality of wireless transmitters, comprising  
10 monitoring means for monitoring interference of a communication channel associated with a wireless transceiver by a wireless signal from another wireless transmitter, signal generating means for generating a signal indicative of interference, and transmitting means for transmitting said interference  
15 indicating signal to the transmitter transmitting the wireless signal causing the interference to control the level of interference.

52. A controller as claimed in claim 51, wherein said monitoring means is adapted to receive a signal indicative of  
20 said interference from a wireless transmitter and said generating means is responsive to said signal to generate said signal indicating said interference.

53. A controller as claimed in claim 51, wherein said signal indicating interference comprises a message for reducing  
25 the power level of the wireless signal causing said interference.

54. A controller as claimed in claim 51, wherein said  
15 controller is adapted to control the operation of a plurality of wireless transmitters.



55. A controller for controlling the operation of a wireless transmitter in a wireless communication network containing a plurality of wireless transmitters, comprising monitoring means for monitoring a signal indicative of a power level of a wireless communication signal transmitted by a transmitter, comparing means for comparing the power level with a predetermined value, and transmitting means for transmitting a signal to said transmitter in response to said comparison indicative of the result of said comparison.

56. A controller as claimed in claim 55, wherein said predetermined power level comprises a value which is insufficient to cause substantial interference with another communication channel.

57. A controller as claimed in claim 56, wherein said predetermined level is substantially the maximum power level that does not cause substantial interference with another communication channel.

58. A controller as claimed in claim 55, wherein said other communication channel is associated with another wireless transmitter in said communication network.

59. A controller as claimed in claim 58, wherein said other communication channel comprises a wireless communication channel received by a wireless receiver associated with another transmitter of said communication network

60. A controller as claimed in claim 55, wherein said predetermined power level is insufficient to cause interference with communication channels associated with any other transmitter of said communication network.

61. A controller as claimed in claim 55, wherein said signal indicative of a power level comprises a request from

said transmitter to increase its power level, and said transmitting means is arrange to transmit a signal indicative of an allowance of said requested increase if said requested power level is less than or equal to said predetermined value and a denial of said requested increase if the requested power level exceeds said predetermined value.

62. A controller for controlling the operation of a wireless transmitter in a wireless communication network having a plurality of wireless transmitters, comprising receiving means for receiving a signal indicative of a power level for a wireless communication signal from a transmitter in said network, and transmitting means for transmitting a signal in response to the received signal to another transmitter in said network for enabling said transmitter to increase the power level of its wireless transmission signal.

63. A method of generating a signal carrying data for wireless transmission, comprising receiving data for wireless transmission, monitoring a parameter indicative of the quantity of received data and varying the rate at which data is included in said signal in response to said monitored parameter.

64. A method as claimed in claim 63, comprising controlling said rate by controlling the capacity of said wireless transmission channel.

65. A method as claimed in claim 63, comprising increasing said data rate if said parameter reaches or exceeds a predetermined threshold.

66. A method as claimed in claim 63, comprising decreasing said rate from a first level to a second level if said parameter reaches or falls below a predetermined threshold.

67. A method as claimed in claim 63, further comprising controlling the power of said signal in response to said parameter.

68. A method of generating a signal for carrying data for wireless transmission, comprising monitoring a parameter indicative of a quality of said wireless signal, comparing said quality with predetermined value and decreasing the capacity of the wireless signal if said parameter falls below a predetermined value.

69. A method of controlling a transmitter in a wireless communication network containing a plurality of transmitters, comprising monitoring interference of a wireless communication channel associated with a transmitter in said network by a second wireless communication channel associated with another transmitter in said network and in response to determining interference, transmitting a signal to the transmitter causing said interference to reduce the power level of its wireless transmission channel.

70. A method of determining an acceptable level of transmission power for each of a plurality of transmitters in a wireless communication network comprising the steps of increasing the transmission power of each transmitter in turn, monitoring interference of a communication channel associated with at least one of the other transmitters and determining an acceptable level of transmission power for each transmitter based on the power level of each transmitter at which an interference condition is detected.

71. An apparatus for generating a signal for wireless transmission, comprising signal generating means for receiving data and generating an output signal containing received data for wireless transmission, monitoring means for monitoring the quantity of data supplied to said generating means for wireless

transmission and a controller for controlling said signal generating means to vary the rate at which data is output from said signal generating means in said output signal in response to said monitored quantity of data for wireless transmission.

5 72. An apparatus as claimed in claim 71, wherein said signal generating means includes signal encoding means for inserting code into said data, and said controller is arranged to control the quantity of code inserted into said data in response to said monitored quantity of data for wireless  
10 transmission.

73. An apparatus as claimed in claim 72, wherein said code provides an error check.

74. An apparatus as claimed in claim 73, wherein said code comprises a forward error correction code (FEC).

15 75. An apparatus as claimed in claim 71, wherein said signal generating means includes signal modulating means capable of modulating said signal with data at at least two different data rates, and said controller is arranged to control said modulating means to modulate said signal at a data  
20 rate determined according to the monitored quantity of data for wireless transmission.

76. An apparatus as claimed in claim 71, wherein said signal generating means further includes a signal amplifier for amplifying said signal, and said controller is arranged to  
25 control the gain and/or power output of said amplifier in response to said monitored quantity of data for wireless transmission.

77. An apparatus as claimed in claim 71, further comprising comparing means for comparing a parameter indicative  
30 of the monitored quantity of data for wireless transmission

with a predetermined threshold value and wherein said controller is arranged to control said generating means to decrease the data transmission rate in response to said parameter decreasing from a value at or above said  
5 predetermined threshold to a value below said predetermined threshold.

78. An apparatus as claimed in claim 77, wherein said controller is arranged to control said modulating means to reduce the modulation rate in response to said parameter  
10 falling below said predetermined threshold value.

79. An apparatus as claimed in claim 71, further comprising comparing means for comparing a parameter indicative of the monitored quantity of data for RF transmission with a threshold value and for communicating the result of said  
15 comparison to said controller.

80. An apparatus as claimed in claim 79, wherein said controller is arranged to control said generating means to increase the rate of data transmission if said parameter exceeds said threshold value.

20 81. An apparatus as claimed in claim 80, further including delay means for delaying the response of said controller to said parameter passing above or below said predetermined threshold.

82. An apparatus as claimed in claim 81, wherein said  
25 delay means comprises counter means for counting the number of times said parameter passes said predetermined threshold, said controller being arranged not to respond to control said generating means until said number reaches a predetermined value.

83. An apparatus as claimed in claim 79, further comprising request generating means for generating a request to a control station to increase the data transmission rate in response to said monitored quantity of data for wireless transmission, receiving means for receiving a signal indicating whether permission to increase the data transmission rate is granted or denied, wherein said controller controls said generating means in response to the received signal.

84. An apparatus as claimed in claim 79, further comprising request generating means for generating a request to a control station to increase the gain of said amplifier and receiving means for receiving a signal from said control station indicating whether permission to increase said gain is granted or denied, said controller being arranged to control said generating means in response to said received signal.

85. An apparatus as claimed in claim 79, further comprising memory means for storing a parameter indicative of the maximum output power level of the wireless data transmission signal which does not interfere with other wireless transmission signals.

86. A communication system comprising a first wireless transmitter and a second wireless transmitter, the first transmitter having means to vary the power level of the wireless transmission signal transmitted by said first transmitter, said second transmitter comprising signal generating means for generating a signal for wireless transmission containing data and means to vary the rate at which data is placed onto said signal, communication means for communicating from said first transmitter to said second transmitter a signal indicative of the wireless signal power level from said first transmitter, said second transmitter including means for increasing the data transmission rate

output by said second transmitter when the power level of said first transmitter communicated by said communicating means is at a predetermined value.

87. A communication system comprising a first wireless transmitter and a second wireless transmitter, each transmitter having means to vary the output power level of its respective wireless transmission signal and means for communicating a signal from at least one of said first and second transmitter to the other transmitter indicative of the power level of said one transmitter, the other transmitter including means for varying its output power level in response to said signal communicated by said communication means.

88. A communication system comprising a transmitter for generating and transmitting a wireless data transmission signal, a receiver for receiving said wireless data transmission signal from said transmitter, means responsive to the attenuation of said wireless signal, and/or the presence of a potentially attenuating medium in path of said signal for causing the output level of said wireless transmission signal to be increased when the attenuation reaches a predetermined level and/or the presence of said potentially attenuating medium is detected, detection means for detecting interference of another signal by said wireless transmission signal and control means for reducing the power level of said transmission signal output by said transmitter in response to the detection of said interference above an acceptable level.